

Army Regulation 700-132  
AFI 21-131(I)  
OPNAVINST 4731.1B

Logistics

# Joint Oil Analysis Program

Departments of the Army,  
Air Force  
Navy  
Washington, DC  
16 November 2004

**UNCLASSIFIED**

# ***SUMMARY of CHANGE***

AR 700-132/AFI 21-131(I)/OPNAVINST 4731.1B  
Joint Oil Analysis Program

Specifically, this major revision, dated 16 November 2004--

- o Provides additional guidance on inter-Service management processes to ensure coordinated planning and execution within the Joint Oil Analysis Program community and among the three Services' oil analysis programs (para 1-4e).
- o Adds a list of references to the Glossary of Terms.

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Effective 16 December 2004

## Logistics

### Joint Oil Analysis Program

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By Order of the Secretaries of the Army, Air Force, and Navy:

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*General, United States Army*  
*Chief of Staff*

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*(Warfare Requirements and Programs)*

**History.** This publication is a major revision.

**Summary.** This regulation specifically defines Joint Oil Analysis Program policies, goals, and responsibilities.

**Applicability.** This regulation applies to both the Active Service and the Reserve Components of the Army, Navy, and Air Force. This publication is not applicable during mobilization.

**Proponent and exception authority.** The proponent of this regulation is the Deputy Chief of Staff, G-4. The proponent has the authority to approve exceptions or waivers to this regulation that are consistent with controlling law and regulations. The proponent may delegate this approval authority, in writing, to a division chief with the proponent agency or its direct reporting unit or field operating agency, in the grade of colonel or the civilian equivalent. Activities may request a waiver to this regulation by providing justification that includes a full analysis of

the expected benefits and must include formal review by the activity's senior legal officer. All waiver requests will be endorsed by the commander or senior leader of the requesting activity and forwarded through their higher headquarters to the policy proponent. Refer to AR 25-30 for specific guidance.

**Army management control process.** This regulation does not contain management control provisions and does not identify key management controls that must be evaluated.

**Supplementation.** Supplementation of this regulation and establishment of command and local forms are prohibited without prior approval from the appropriate military department headquarters.

**Suggested improvements.** Users are invited to submit comments and suggested improvements to this regulation. Internet users can submit their comments and suggested improvements through the electronic DA Form 2028 (Recommended

Changes to Publications and Blank Forms) found within the individual Deputy Chief of Staff, G-4, regulation and pamphlet. Anyone without internet access should submit their comments and suggested improvements on a DA Form 2028 directly to HQDA, ODCS, G-4, ATTN: DALO-SMP, 500 Army Pentagon, Washington, DC. 20310-5000.

**Distribution.** This publication is available in electronic media only and is intended for command levels A, B, C, D, and E for the Active Army, the Army National Guard of the United States (ARNGUS), and the U.S. Army Reserve and all command levels of the Air Force and Navy.

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\*This regulation supersedes AR 700-132, AFI 21-131(I), OPNAVINST 4731.1A, dated 5 December 1990.

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### **Glossary**

## **Chapter 1**

### **Purpose**

#### **1-1. Purpose**

This regulation prescribes policy, goals, and responsibilities for the Joint Oil Analysis Program (JOAP). The purpose of the JOAP is to ensure timely and accurate oil and other fluid-wetted component analysis support to Army, Navy, and Air Force customers through the strategic location of all oil analysis laboratories and through standardization of procedures, data elements, analytical instrumentation, and diagnostic techniques. The JOAP is a combined effort of the Army, Navy, and Air Force to establish and maintain a standard program. The JOAP uses oil analysis as a maintenance diagnostic tool for the following purposes—

- a. To determine the internal condition of aeronautical and non-aeronautical engines, transmissions, and gearboxes, and their oil-wetted components, through the analysis of used lubricating oils, grease, and fluids, that has as its goal flight safety, enhanced equipment readiness, reduced maintenance costs, and the extension of component life.
- b. To determine the suitability of lubricants and fluids for continued use, that results in savings and early detection of harmful conditions that, if not corrected, could promote premature component failure.

#### **1-2. References**

Required and related publications and prescribed and referenced forms are listed in appendix A.

#### **1-3. Explanation of abbreviations and terms**

Abbreviations and terms used in this regulation are explained in the glossary.

#### **1-4. Responsibilities**

- a. Secretaries of the Army, Air Force, and Navy will—
  - (1) Administer an effective oil analysis program that will accomplish the goals and policies of this instruction.
  - (2) Issue supplemental guidance to this instruction to implement Service participation in JOAP and to promote maximum participation and cooperation.
  - (3) Ensure that all appropriate planning documents (for example, strategic 6-year plan, budgets, facilities, manpower, maintenance, etc.) include requirements for JOAP and the Joint Oil Analysis Program Technical Support Center (JOAP TSC).
  - (4) Coordinate oil analysis research, development, test, and evaluation projects and studies among the Services and the JOAP TSC to avoid duplicate efforts with regard to the improvement, enhancement, augmentation, or replacement of existing analytical testing techniques and to ensure inter-Service agreement on JOAP study objectives and methodology.
  - (5) Ensure oil analysis laboratories provide oil analysis support to the other Services within their capabilities according to this regulation and the JOAP Manual.
  - (6) Designate an office of primary responsibility (OPR) and provide a primary and an alternate member to the Joint Oil Analysis Program Executive Committee (JOAP EC).
  - (7) Provide resources to implement this instruction.
  - (8) Provide resources to staff the JOAP TSC and fund JOAP TSC operations to include personnel, laboratory equipment, supplies, travel, and other expenses in accordance with the Memorandum of Understanding (MOU) for the support of the JOAP TSC.
  - (9) Determine the applicability of oil analysis techniques and related evaluation criteria for its equipment and cognizant lubricant products.
  - (10) Recommend to the Joint Oil Analysis Program Coordinating Group (JOAP CG) new and emerging techniques, technologies, and equipment for JOAP TSC test and evaluation.
  - (11) Designate an oil analysis program management office for execution of its oil analysis program and participation in the JOAP.
  - (12) Provide a lieutenant colonel-equivalent military director for the JOAP TSC on a rotating 3-year basis.
  - (13) Administer, fund, and maintain a data system that is interoperable between the Services.
  - (14) Ensure oil and fluid analysis data are collected, analyzed, and distributed to inter-Service customers.
  - (15) Provide for inter-Service participation in contracts to procure and support JOAP equipment.
  - (16) Assume administrative responsibility to schedule, fund, and arrange for equipment maintenance and repair within the provisions of inter-Service JOAP contracts.
  - (17) Provide equipment, supplies, and training for instructors at the Defense Joint Oil Analysis Program Training Course, J3AZP2A752 003, for Service-specific testing.
  - (18) Distribute the JOAP Manual, NA 17-15-50/T.O. 33-1-37/TM 38-301 series, to its activities.
- b. The Secretary of the Army will—
  - (1) Develop and maintain a performance work statement template for contractor-operated JOAP laboratories.

(2) Maintain a contract to procure, maintain, and repair JOAP-approved Fourier Transform Infrared (FT-IR) analysis equipment used by the Army, Navy, and Air Force oil analysis laboratories and JOAP TSC laboratory in support of JOAP. Each Service will fund the actual equipment procurement and maintenance and repair costs, and the Army will provide the contracts and item management services.

c. The Secretary of the Navy will—

(1) Provide a facility for the JOAP TSC.

(2) Serve as the financial executive agent for the JOAP TSC and provide accounting management for the JOAP TSC. Financial responsibilities, procedures, and requirements are specified in a separate MOU between NAVAIR and the JOAP TSC.

(3) Provide for an independent financial audit of the JOAP TSC every third year.

(4) Effect changes to the JOAP Manual for distribution to the Service program offices, maintain the electronic copy of the Manual, and distribute the JOAP Manual and its changes to Navy activities.

d. The Secretary of the Air Force will establish, administer, and provide for JOAP logistics support, including—

(1) Maintaining a contract to procure, maintain, and repair JOAP-approved atomic emission spectrometers used by the Army, Navy, and Air Force oil analysis laboratories and JOAP TSC laboratory in support of the JOAP. Each Service will fund the actual equipment procurement and maintenance and repair costs, and the Air Force will provide the contracts and item management services.

(2) Administering and providing budgetary support for the Defense Joint Oil Analysis Program Training Course (J3AZP2A752 003).

e. The JOAP organization. The JOAP structure is comprised of the JOAP Offices of Primary Responsibility, the JOAP Executive Committee, the JOAP Coordinating Group, and the JOAP Technical Support Center.

(1) Chiefs, JOAP Offices of Primary Responsibility (OPRs) will—

(a) Be responsible for the Services' oil analysis policy, strategic planning, and participation in the JOAP.

(b) Provide inter-Service policy coordination and management oversight.

(2) The Chairperson, JOAP Executive Committee (EC) will—

(a) Be the primary point of contact for matters originating from the JOAP CG. The Chairperson, JOAP EC, must be rotated among the three Services and have a tenure coinciding with that of the TSC Director, and the appointment must take effect when a new TSC Director reports for duty. The Chairperson of the JOAP EC, the Chairperson of the JOAP CG, and the Director of the JOAP TSC will each be from different military departments. The Director of the JOAP TSC participates as a permanent advisory member of the EC.

(b) Provide headquarters level review on all matters requiring resolution above the JOAP CG.

(c) Ensure all appropriate planning documents (budgets, facilities, manpower, maintenance, etc.) include requirements for JOAP and the JOAP TSC.

(d) Review JOAP CG recommendations and determine which new technologies and equipment will be implemented as the standard for the JOAP community.

(e) Resolve disagreements among the Services on JOAP-related matters.

(f) Meet with the JOAP CG semiannually, or more frequently if required, to ensure overall progress of the JOAP.

(g) Review recommended staffing and funding changes to the tri-Service MOU in April, approving/disapproving as applicable and determine an equitable distribution of the requirement across the Services.

(h) Approve all JOAP TSC test and evaluation workloads as submitted by the JOAP CG.

(i) Elevate issues to the JOAP OPRs as required.

(j) Will schedule meetings, set agenda, brief the JOAP EC on issues as required, provide minutes of meeting, consolidate inputs from other JOAP EC members and provide information to the JOAP TSC Director's rater for performance evaluation, and coordinate the development of policy and strategic plans for the JOAP.

(3) The JOAP Coordinating Group (CG) is composed of the Services' oil analysis program managers. The director of the JOAP TSC participates as a permanent advisory member and is included in all JOAP CG meetings. Additional members from the Marine Corps, Coast Guard, or other participating agencies may participate as advisory members. The Chairperson, JOAP CG will—

(a) Be rotated among the three Services and have a tenure coinciding with that of the TSC Director and JOAP EC Chairperson, and the appointment must take effect when a new TSC Director reports for duty. The Chairperson of the JOAP EC, the Chairperson of the JOAP CG, and the Director of the JOAP TSC will each be from different military departments. The Chairperson of the JOAP CG will schedule meetings, set agenda, and provide minutes of meetings.

(b) Assign tasks to the JOAP TSC in addition to the JOAP TSC tasks listed in this regulation. The chairperson will be required to pass to the JOAP TSC Director all taskings approved by the JOAP CG. All tasks assigned will be in writing and include the concurrence of all JOAP CG members. In addition, each tasking will have a sponsoring JOAP CG member.

(c) Ensure testing assigned to the JOAP TSC that evaluates effectiveness of an instrument or technique for a specific system and/or lubricant is performed in coordination with the equipment engineers/managers and/or lubricant specification preparing activity for the specific analysis equipment being evaluated.

- (d) Coordinate information among the Services and the JOAP TSC Director concerning changes in program policy and direction, technology, procedures, etc., to ensure standardization and improve efficiency.
  - (e) Coordinate establishment of JOAP laboratories to avoid duplication.
  - (f) Consolidate tri-Service requirements for JOAP-related analytical instruments.
  - (g) Resolve routine problems in the JOAP and provide an interface among the Services for planning and administering the JOAP.
  - (h) Provide recommendations to the JOAP EC on JOAP policy, strategic planning, and new technologies and equipment to be implemented as the standard for the JOAP community.
  - (i) Review and recommend changes to the joint instruction to the JOAP EC annually in April.
  - (j) Review the tri-Service MOU and the JOAP TSC recommendations annually in March and provide a consolidated recommendation to the JOAP EC. Each JOAP CG member will present a program overview and the JOAP CG Chairperson will present an overview of JOAP CG activities to include any unresolved issues at the semiannual JOAP EC meetings.
  - (k) Meet quarterly or more frequently, if required, to ensure overall progress is consistent with the JOAP guidance and provide a quarterly report of oil analysis-related issues to all participants prior to JOAP CG meetings.
  - (l) Ensure data compatibility among the Services. The primary focus of this task is to ensure that each Service obtains valid data concerning oil analysis support of its equipment by another Service. Each Service must accommodate inter/intra-Service transfer of test data at a frequency determined by the JOAP CG.
  - (m) May charter working groups for special surveys or as required. The Joint Data Management Working Group (JDMWG) is a standing working group that is comprised of a representative of each Service and an associated member from the JOAP TSC. The primary focus of this group is to assist the JOAP CG with data systems and the transfer between Services.
  - (n) Facilitate equipment standardization goals of the JOAP through consolidation of tri-Service requirements for laboratory test instruments.
  - (o) Provide annually an assessment of future JOAP requirements to include requirements for research, development, test, evaluation, maintenance, sustainment, personnel, facilities, equipment, etc., to the JOAP EC and JOAP TSC by 31 March of each year.
- (4) The Joint Oil Analysis Program Technical Support Center (TSC). A single, tri-Service staffed JOAP TSC is maintained to provide technical support to the JOAP in order to increase program effectiveness, readiness, and economy. The JOAP TSC is staffed with personnel provided by each military department. A military director (O-5) directs all operations of the JOAP TSC. The directorship, JOAP TSC, is held on a rotating basis among the three Services. The JOAP TSC performs tasks specified in this instruction or approved by the JOAP CG. The Chairperson, JOAP CG may assign tasks to the JOAP TSC in addition to the JOAP TSC tasks listed in this regulation. The JOAP CG Chairperson will be required to pass to the JOAP TSC Director all taskings approved by the JOAP CG. All tasks assigned will be in writing and include the concurrence of all JOAP CG members. If backlogs occur, the Chairperson, JOAP CG, and the Director, JOAP TSC, are responsible for jointly prioritizing taskings consistent with the overall objectives of the JOAP. The Director, JOAP TSC will—
- (a) Ensure production of JOAP standards at the least cost.
  - (b) Develop and maintain the standard operating procedure for the manufacture and quality verification of reference/calibration fluid standards.
  - (c) Ensure validation of reference/calibration fluid standards on a periodic basis by an independent source, for example, National Institute of Standards and Technology (NIST).
  - (d) Control the distribution of reference standards. Coordinate with Defense Logistics Agency and other specified activities for DOD requirements.
  - (e) Perform quality assurance and/or acceptance testing on JOAP electrodes or fluids as requested on a reimbursable basis.
  - (f) Conduct laboratory instrument certification programs for JOAP.
  - (g) Conduct laboratory instrument correlation programs for the JOAP in accordance with applicable DOD regulations and agreements.
    - 1. Administer correlation programs for all JOAP certified laboratories.
    - 2. Provide correlation services for the North Atlantic Treaty Organization (NATO).
    - 3. Provide correlation services for other agencies, countries, or industry laboratories on a reimbursable basis in accordance with applicable DOD regulations.
  - (h) Test and evaluate non-developmental (off-the-shelf) equipment for joint applicability as directed by the JOAP CG.
  - (i) Serve as the head of the JOAP TSC, which within its capabilities, is the preferred agency for operational test and evaluation of instruments and techniques being considered for inclusion in the JOAP.
    - 1. Prior to testing, will provide a complete test plan that addresses measures of suitability, measures of effectiveness, and exit criteria as determined by the JOAP TSC and the Service advocate.

2. Perform testing that evaluates the effectiveness of an instrument or technique for a specific system and/or lubricant in coordination with the equipment engineers/managers and/or lubricant specification preparing activity for the specific analysis equipment being evaluated.

3. Not permit modification to the equipment by the manufacturer during test and evaluation of non-developmental items or equipment, except as specifically approved by the contracting officer or as specified in the test plan.

(j) Review and evaluate available technologies from military, industrial, and academic sources for future oil/fluid analysis monitoring requirements.

(k) Review research, development, test & evaluation (T&E) efforts of other agencies to keep informed of new technologies.

(l) Provide quarterly to JOAP CG a written summary report of all technologies reviewed, T&E efforts, and special tests conducted by the JOAP TSC.

(m) Prepare and maintain technical oversight for the Joint Oil Analysis Program Manual (NAVAIR 17-15-50, TM 38-301, T.O. 33-1-37, Volumes 1-4) and other JOAP technical documents. Coordinate the resolution of Service differences.

(n) Operate a JOAP-certified laboratory.

1. The laboratory will be able to perform all JOAP approved tests and any additional tests required by the individual Services.

2. The laboratory will serve as a test site for test and evaluation and other technical projects.

(o) Oversee a clearinghouse for technological interchange among the Services. This includes but is not limited to—

1. Developing, publishing, maintaining, and distributing documents such as the oil analysis program directories, correlation reports, customer lists, newsletters, and other documents as needed.

2. Conducting/participating in meetings, conferences, symposiums, and coordinating with other agencies, civilian companies, universities, and other countries for the purpose of technological exchange and report on emerging technologies.

3. Providing statistical, analytical, management, technical, and other reports to equipment engineers, program managers, field activities, and other service offices.

(p) Provide technical assistance to all participating field activities for instrument operation and maintenance.

(q) Provide technical assistance for the JOAP operator/evaluator course.

(r) Task the JOAP TSC according to core mission requirements, JOAP CG, and JOAP EC input.

(s) Review and provide recommended changes to the tri-Service MOU annually in February for staffing and funding of the JOAP TSC and submit to the JOAP CG and JOAP EC for approval.

(t) Supervise/manage personnel at the JOAP TSC in accordance with a Memorandum of Agreement with each Service, that will define relationships, authority and responsibilities with respect to the Army, Navy, and the Air Force.

(u) Negotiate a host-tenant agreement with the commanding officer of host installation.

(v) Provide an annual cost/expenditure report and budget projection to the JOAP EC and the JOAP CG as well as a cost avoidance report.

(5) JOAP-certified laboratories. Lab operators, JOAP-certified laboratories will—

(a) Provide non-reimbursable routine support to all DOD and U.S. Coast Guard transient customers and permanent customers in the laboratory's assigned area of responsibility. Any JOAP CG member may authorize customers to use his or her Service's laboratory if additional workload does not interfere with an existing workload.

(b) Provide inter-Service support only when JOAP-certified. Only qualified operators and evaluators will perform inter-Service work. Service program managers will establish their own policies for using non-JOAP certified laboratories.

(c) Ensure that laboratory response time meets the operational requirements of the customer service. If the laboratory response time or total turn around time fails to routinely meet inter-Service customer service operational requirements, the JOAP CG must review and resolve the issue.

(d) Ensure that aeronautical samples will have precedence over all other routine samples.

(e) Ensure that a maintenance recommendation resulting from an oil analysis finding is communicated to the customer as quickly as possible.

(f) Encourage Joint manning and/or funding of JOAP certified laboratories.

## **Chapter 2**

### **JOAP Goals and Policy**

#### **2-1. JOAP goals**

a. Improve the operational readiness and economy of military equipment through the use of oil analysis, a condition-



monitoring concept that relies on the detection and measurement of wear-metals and the determination of a lubricant's physical properties.

*b.* Collect and analyze oil analysis data in order to increase the effectiveness of oil analysis techniques in the diagnosis of potential equipment failures and lubricant condition to provide wear-metal and lubricant physical property data to the various weapon systems managers and others, as required.

*c.* Test, evaluate, and promote where appropriate new and emerging techniques, technologies, and equipment for oil analysis.

*d.* Ensure all Army, Navy, and Air Force oil analysis plans and operations are integrated to provide standardized laboratory techniques, procedures, data, calibration standards, analytical instruments, and inter-Service oil analysis support to all military departments where practicable.

## **2-2. JOAP policy**

The JOAP was instituted to—

*a.* Maximize inter-Service use of oil analysis through consolidation of laboratories, coordination of support and standardization of instrumentation, analytical techniques, data, forms, and customer laboratory procedures.

*b.* Provide non-reimbursable routine support to all DOD and U.S. Coast Guard transient customers and permanent customers in each JOAP certified laboratory's assigned area of responsibility.

## **Appendix A**

### **References**

#### **Section I**

##### **Required Publications**

**NAVAIR 17-15-50/TM 38-301/T.O. 33-1-37 Volumes 1-4**

Joint Oil Analysis Program (Cited in para 1-4a(18) and 1-4e(4)(m).)

#### **Section II**

##### **Related Publications**

**AFI 21-124**

Oil Analysis Program. (Available at <http://www.e-publishing.af.mil>.)

#### **Section III**

##### **Prescribed Forms**

This section contains no entries.

#### **Section IV**

##### **Referenced Forms**

This section contains no entries.

## **Glossary**

### **Section I Abbreviations**

#### **CG**

coordinating group

#### **EC**

executive committee

#### **FT-IR**

Fourier Transform Infrared

#### **JDMWG**

Joint Data Management Working Group

#### **JOAP**

Joint Oil Analysis Program

#### **MOU**

Memorandum of Understanding

#### **NIST**

National Institute of Standards and Technology

#### **OPR**

office of primary responsibility

#### **T&E**

test and evaluation

#### **TSC**

Technical Support Center

### **Section II Terms**

#### **Certification**

The process by which a laboratory instrument is approved for JOAP use by meeting or exceeding minimum performance criteria in the JOAP Correlation Program.

#### **Certification Program**

A program managed by the JOAP TSC in coordination with the Service's oil analysis program management office, to ensure that laboratories meet JOAP certification requirements.

#### **Correlation Program**

A program managed by the JOAP TSC in which all JOAP certified laboratories receive and analyze correlation samples to confirm that all spectrometers produce correlatable results on a continuing basis to meet inter- and intra-Service analysis capability.

#### **Correlation sample**

A sample of oil, synthetic or mineral, prepared by the JOAP TSC and used to monitor instrument capability to produce desired results.

#### **Customer**

Any activity authorized by the service program manager to submit samples to and receive oil analysis results and recommendations from a JOAP laboratory.

#### **Evaluation criteria**

Information used by oil analysis laboratories in the evaluation of oil analysis results. Evaluation criteria are composed

of some or all of the following: wear-metal limits, wear-metal trends, decision tables, physical test limits, component part composition, component diagrams, and specific comments related to the particular component from which an oil sample is taken.

**Inter-Service customer**

An activity within one of the Services that has oil analysis support provided by another Service's laboratory.

**Joint Oil Analysis Program–Coordinating Group (JOAP CG)**

A working group responsible for implementing and monitoring JOAP activities. It is composed of oil analysis program management representatives from the Army, Navy, and Air Force and the director of the JOAP TSC as an advisory member. The Marine Corps and Coast Guard may be included as nonvoting, associate members of the JOAP CG.

**JOAP certified laboratory**

An Army, Navy, or Air Force oil analysis laboratory operating according to JOAP regulations. It must be certified according to established JOAP procedures and provide oil analysis support to the other Services within its capabilities.

**JOAP Manual**

A tri-Service manual (NAVAIR 17–15–50.1/50.2/50.3/50.4, TM 38–301–1/-2/-3/-4, and TO 33–1–37–1/-2/-3/-4) containing consolidated and standardized procedures, methods, and evaluation criteria used by oil analysis laboratories and customers.

**JOAP spectrometer**

An atomic emission spectrometer meeting specifications, approved by the JOAP CG, used to detect and measure designated war metals contained in lubricating oils and other fluid samples.

**JOAP offices of primary responsibility**

The Army, Navy, and Air Force executive agents responsible for inter-Service policy coordination, problem resolution, and management control over their respective Service's oil analysis programs.

**JOAP Technical Support Center (TSC)**

An organization composed of technical representatives from each Service that provides technical support to the JOAP and performs technical tasks for the JOAP CG.

**Non-JOAP laboratory**

A laboratory that is not part of the Service's oil analysis program, but may or may not participate in some portions of the JOAP. A non-JOAP laboratory cannot be JOAP certified through the JOAP certification program. Use of non-JOAP laboratories will be at the discretion of the individual Service program managers.

**Physical property analysis**

Analytical procedures used to determine the suitability of a lubricant or fluid for continued use. Tests include analyses for water and fuel contamination, fluid viscosity, and solids contamination and other tests required by the cognizant equipment engineer.

**Response time**

The elapsed work hours from the time that an analysis request is received in the oil analysis laboratory and required processing is completed. Laboratory processing is completed when the sample analysis is evaluated and, if required, action is taken to notify the customer of a maintenance recommendation.

**Spectrometric analysis**

A technique used to measure wear metal content and other elements from oil-wetted component.

**Spectrometric calibration standard**

A mineral oil that contains known quantities of specific organo-metallic compounds, has a controlled viscosity and flash point, and is used to calibrate and standardize spectrometers. The JOAP CG must approve standards composition.

**Turnaround time**

The interval encompassing the period from the time the sample is taken until an answer (maintenance recommendation, request for resample, etc.) is received by the customer. Turnaround time requirements may vary for the individual customers.

**Viscosity calibration standard**

A fluid of known viscosity used by oil analysis laboratories to standardize the viscometers used in the performance of physical property tests.

**Section III****Special Abbreviations and Terms**

This section contains no entries.

**UNCLASSIFIED**

**PIN 044817-000**

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